

No. 23-1078

IN THE UNITED STATES COURT OF APPEALS
FOR THE FOURTH CIRCUIT

B.P.J., by next friend and mother, HEATHER JACKSON,

Plaintiff-Appellant / Cross-Appellee,

v.

WEST VIRGINIA STATE BOARD OF EDUCATION; HARRISON COUNTY
BOARD OF EDUCATION; W. CLAYTON BURCH, in his official capacity as State
Superintendent; DORA STUTLER, in her official capacity as Harrison County
Superintendent,

Defendants-Appellees,

and

WEST VIRGINIA SECONDARY SCHOOL ACTIVITIES COMMISSION,

Defendant-Appellee / Cross-Appellant,

and

THE STATE OF WEST VIRGINIA, LAINEY ARMISTEAD,

Intervenors-Appellees.

Appeal From The United States District Court
For The Southern District of West Virginia
Case No. 2:21-cv-00316 (Goodwin, J.)
Hon. Robert N. Chatigny

BRIEF OF INDEPENDENT COUNCIL ON WOMEN'S SPORT
AS AMICI CURIAE IN SUPPORT OF APPELLEES

May 3, 2023

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CORPORATE DISCLOSURE STATEMENT

The undersigned counsel confirms that neither the Independent Council on Women's Sport (ICONS), nor any of its members has a parent corporation and no publicly held corporation owns 10% or more of the stock of ICONS of any of its members.

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Other Authorities

Becker et al., 2015. Hormonal ‘minipuberty’ influences the somatic development of boys but not of girls up to the age of 6 years. <i>Clinical Endocrinology</i> 83: 694-701.....	26
Bidlingmaier, F., Dorr, H.G., Eisenmenger, W., Kuhnle, U., Knorr, D., “Contribution of the adrenal gland to the production of androstenedione and testosterone during the first two years of life,” <i>J Clin Endocrinol Metab.</i> 1986 62:331–335	24
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Lanciotti L, Cofini M, Leonardi A, Penta L, Esposito S. Up-To-Date Review About Minipuberty and Overview on Hypothalamic-Pituitary-Gonadal Axis Activation in Fetal and Neonatal Life. <i>Front Endocrinol (Lausanne)</i> . 2018 Jul 23;9:410	25
Pang, S., Levine, L.S., Chow, D., Sagiani, F., Saenger, P., New, M.I., “Dihydrotestosterone and its relationship to testosterone in infancy and childhood,” <i>J Clin Endocrinol Metab.</i> 1979 48:821–826.....	25
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Schwartzler et al., 2004. Sex-specific antenatal reference growth charts for uncomplicated singleton pregnancies at 15–40 weeks of gestation. <i>Ultrasound in Obstetrics and Gynaecology</i> 23(1): 23-29	24
Tambalis KD, Panagiotakos DB, Psarra G, Daskalakis S, Kavouras SA, Geladas N, Tokmakidis S, Sidossis LS. Physical fitness normative values for 6-18-year-old Greek boys and girls, using the empirical distribution and the lambda, mu, and sigma statistical	23

INTEREST OF *AMICI CURIAE*¹

Amici are the Independent Council on Women's Sport (ICONS) and its members identified in Section I below. ICONS is a network and advocacy group comprised of current and former collegiate and professional women² athletes, their families and supporters who believe the next generation of women and girls deserve the chance to be champions and to see an expanded and celebrated world of women's sports. Reflecting their experience, *amici* have an interest in the preservation of the female category in sport.

SUMMARY

Recognizing biological differences between the sexes and protecting women's spaces from male intrusion are foundational for women to succeed in sports and in life. It is the experience of *Amici* that legal protections giving women the opportunity to take part in and

¹ In accordance with Appellate Rule 29(a)(4)(E), counsel affirms the undersigned counsel authored this brief, no counsel for any party authored this brief in whole or in part, and no party, party's counsel, or person other than the *amicus curiae*, its members, or counsel, contributed money intended to fund preparing or submitting this brief.

² As used herein the terms "male" "female" "man" "woman" "men" "women" and "girls" and "boys" are used to refer to members of the male or female sex without regard to gender identification.

succeed in sport are essential to the advancement of women and depend on the law's basic ability to distinguish between women and men and courts' capacity to evaluate, compare, and equalize the opportunities of the former in comparison to those of the latter.

In contrast, Appellants' arguments diminish irreplaceable and life changing opportunities and degrade legal protections for women by falsely equating gender identity to sex, ignoring the history and purposes of Title IX, and understating harm Appellants' arguments inflict on women and girls.

Amici explain why protection against male advantage afforded girls in the earliest stages of youth and developmental sport is just as vital as protection in elite sport. Rather than diminished, protections for girls should be upheld, not deferred to some later time such as post puberty. It is a misguided, objectifying, and patently discriminatory trope that girls are undeserving of protection until they reach an elite level in sport, as if women are not worthy of protection until they prove themselves world class athletes. Deferring protection of girls will cause them to leave competitive sport, never learning to love it or discovering the benefits it can provide them.

ARGUMENT

I. EXPERIENCE OF INDIVIDUAL *AMICI*

Sex separated sport is necessary for girls to develop a healthy view of their own bodies. For many girls, lessons learned in sport are vital to overcoming obstacles and succeeding in life. Yet, due to male biological advantages, failing to protect the girls' category will cause girls to leave sport. Therefore, protecting sex separation in girls' sports is foundational to the health, happiness, and success of future generations of women.

A. **Lauren Bondly, Age-Group National Champion Triathlete, U.S. National Team Member, Engineer**

Lauren Bondly explains why participation in sex separated sport is vital to women developing a healthy view of their own bodies:

“It is impossible for me to overstate the importance competitive sport has played in my life. I can say without risk of hyperbole it saved my life and career.

“Like many young women, I suffered from anorexia in my late teens and early twenties. I began running to burn calories and create another means to control my compulsive weight loss. One day I entered a local 5k road race and in part because I had given myself permission

to eat a full meal the night before – just for this special occasion – I ended up winning my age group. This was the turning point in my illness.

“Anorexia deceives sufferers into believing it is virtuous to be hungry, that each lower number on the scale is an accomplishment – no matter how low it goes. But at that race, I had achieved a real accomplishment more powerful than the fake self-esteem boosts anorexia offered. I looked at the women’s podium, at strong, incredible female bodies and realized they were not all that different from mine. All I had to do was get healthy, redirect my obsessive tendencies and one day that could be me on the overall women’s podium. Now on occasion – it is. Through sport, I re-learned my relationship with food and my body; I don't know if I would have otherwise.

“Fast forward to graduation from college with a degree in engineering, I soon learned why my chosen career has the reputation it does. Years at my first company were full of unwanted sexual advances and some of the most inappropriate comments imaginable until I left for a company where I was initially treated like a secretary instead of an engineer. In the middle of that period, I switched to triathlon needing

something more challenging to convince myself of my capability in the face of so many claiming I was incapable. If I did not have that one outlet where I could count on having a fair chance to succeed, I would have thrown my diploma in the trash and quit engineering. Today I am happy and satisfied with my career, but it would have been unbearable to continue facing unfairness and humiliation day after day in those earlier years if I had not had competitive sport to balance it out.

“Sport is not just a game. I have witnessed the desire to be the best motivate women to quit alcohol and drugs, to leave abusive relationships, and like me, to overcome mental health issues and foster the fortitude to endure and overcome injustice.

Sport is too important to turn it into a tool that teaches girls to get comfortable being on the receiving end of injustice, or that hard work and overcoming adversity is futile. We cannot replace the strong female bodies on the women’s podium with impossibly unattainable male bodies and pretend that will have no effect on young girls and women who need strong female role models.

Finally, sport must be about fairness. If women do not deserve and receive fairness in the one place where ‘fair play’ is supposed to be

ensured and upheld, what chance do women have in business or elsewhere where women are treated unfairly, and are told to, and expected to, just accept it?”

B. Jennifer Sey, U.S. National Champion Gymnast, U.S. National Team Member First Female Global Brand President at Levi Strauss & Co., Producer of Emmy Award Winning Documentary on Abuse of U.S. Gymnasts

Sport is integral to girls overcoming obstacles and succeeding in life. From age 6 Jennifer Sey pursued her dream of competing on the U.S. gymnastics team and winning a national championship, a goal she realized after more than 10 years of dedication and hard work.

The determination developed as an athlete fueled a pioneering career in business and led her to stand up for the rights of marginalized individuals. Jennifer began working as an entry level employee at Levi Strauss & Co. in 1999, eventually becoming chief marketing officer and then the first female brand president, never losing focus on a desire to use her opportunities as a platform to help others.

Jennifer experienced abusive training practices as an elite gymnast which she wrote about in her 2009 autobiography, *Chalked Up*, a book other gymnasts would point to as giving them courage to

speak up. In 2017 Jennifer became an executive co-sponsor of the first black employees' group at Levi's, engaging the company in improving racial diversity. She was a producer of *Athlete A*, a documentary on the Larry Nassar scandal at USA Gymnastics which won an Emmy as the 2020 Outstanding Investigative Documentary.³

In 2021 Jennifer told NBC commentator and Know Your Value founder Mika Brzezinski, "I suffered from imposter syndrome probably up until about last year. . . I went to Stanford coming out of gymnastics. I was convinced that at any moment, somebody was going to pop out from behind the curtain and tell me I didn't belong. A lot of women . . . have this."⁴ Jennifer explained her experiences in competitive gymnastics helped find her voice and shape her leadership style, telling Brzezinski, "I've learned that your life and journey is not a straight line, and you will get knocked down. When you advocate for yourself, it's not always going to go the way that you want. But you keep going."⁵

Jennifer's path to career success flowed directly from lessons

³ See <https://www.indystar.com/story/news/local/2021/10/01/athlete-a-wins-emmy-outstanding-investigative-documentary/5945215001/>.

⁴ See <https://www.nbcnews.com/know-your-value/feature/how-i-went-elite-gymnast-global-brand-president-levi-s-ncna1272382/>.

⁵ *Id.*

learned as a female athlete, and she is concerned that allowing males to compete in the female category of sport will deprive girls of opportunities to compete on a level playing field. She explains:

“I started gymnastics in 1975, at 6 years old, just three years after the passage of Title IX. In 1976 Nadia Comaneci won the Olympics. Accelerated by the passage of Title IX, gyms started popping up all over the United States – and active little girls like me took to them in droves. With the promise of college scholarships, sport – and gymnastics in particular – gave little girls a chance to thrive.

“By age 10 I made my first National Team. And in 1986, just 9 months after fracturing my femur at the World Championships, I became the National Champion. Gymnastics taught me the values of perseverance, hard work, and discipline. Ultimately, I learned that never giving up meant I could achieve mastery; I learned applying my passion for sport could make me a champion; and I learned directing my commitment could result in a hard-won sense of personal fulfillment.

“After leaving competitive sport, I applied these lessons to my career in business. I started at Levi’s in 1999 as an entry level assistant. Corporate America was then rife with sexism and sexual

harassment. I put my head down and worked hard. I was highly coachable, and I never gave up, always wanting to get better at my craft. Ultimately, in 2020 I became Levi's first female Global Brand President after years as an award-winning Chief Marketing Officer.

"My time as an elite athlete was invaluable, honing the perseverance required to succeed in business. Knowing I could compete on an even playing field against other fiercely dedicated girls and succeed amidst injuries, losses, and other setbacks, shaped me, and enabled my success as a woman in business.

"Recent developments in U.S. sport cause me concern. I see the opportunities of fiercely dedicated girls and young women to compete on a level playing field being sacrificed to a view that says the opportunities of women must take second place to the feelings of males seeking validation through playing women's sport. The idea that the rights of girls must be sacrificed to make others feel better about themselves must be fought vigorously. If it is not, it will lead directly to the feelings of inadequacy and helplessness that plague young girls and against which I have been fighting all my life."

**C. Janel Jorgensen McArdle, Olympic Silver Medalist,
Chief Operating Officer Swim Across America**

Janel Jorgensen McArdle knows that protecting sex separated sport is essential to girls remaining in sport. She speaks from the experiences of a life at the highest levels of competitive sport and sport-based philanthropy and as a woman heading a national organization with thousands of volunteers that has raised over \$100 million for cancer research, prevention, and treatment.

Janel first faced unfair competition when she reached the pinnacle of her sport, competing against the East Germans at the Seoul Olympics in 1988. She explains, “We all knew what was happening and we knew we were robbed of a gold medal we deserved. We were told to be silent, to not risk being called poor losers. Now, decades later, it’s well understood the East Germans were doping, and East German victory was tainted.

“Testosterone and androgenizing drugs were given in large quantities to East German athletes, creating an unfair advantage clean athletes could not overcome. The East German scandal was enormous and remains a black mark on the history of women’s sport. Yet, the scandal we are creating in women’s sports today is even worse. I had

the benefit of sex-testing, a cheek swab to verify my biology. I knew with full confidence the athletes I was racing were women, even if some were artificially enhanced with male androgens.

“However, despite every possible effort to enhance their performance with drugs, East German women could not have qualified to compete with the men. But now, by allowing male bodies in women’s sport we are taking unfairness to another level, not even hiding the intent to make women face an insurmountable physical obstacle, barely debating how much unfairness women in sport will face.

“Today, we do not ask women to compete against women who have taken drugs, we ask women to compete against the biological advantage of being born male that even women on drugs could not overcome. There is no excuse for asking female athletes, of any age, to compete with less talented versions of male biology.

“I left the Olympics with a silver medal at 17 and continued my swimming career, winning 17 National Championships at Stanford, wrapping up a career that gave me amazing opportunities, friendships, and skills. Then, I went to work in the corporate world, and 13 years later, with my father facing cancer, an opportunity came to lead Swim

Across America, a non-profit dedicated to raising money and awareness for cancer research, treatment, and prevention.

“Working at Swim Across America has been a way that a sport so impactful and important in shaping my life has helped me benefit the lives of others. I have been involved with Swim Across America for over 35 years in many roles: Olympian, swimmer, board member, COO, and CEO, and repeatedly seen how my sport of swimming has changed, and in some cases saved, people’s lives.

“Yet, for as much as I love swimming, I know that if I had been faced with gross unfairness in my sport early on or repeatedly, I would not have continued. If I stood on the block next to a male body that I knew I could not beat, the frustration would have forced me to quit. Had that happened my life may have had fewer meaningful and significant opportunities to impact others.

“I want sport for girls growing up today to be what it was for me until I got to the Olympics . . . an amazing environment where I learned confidence, perseverance, and grit. I know what it feels like to step up to the starting block and know that even if I were given a head start, I couldn’t compete against the illegal drugs pulsing through my

competitor's veins. I know what it feels like to be a 17-year-old girl standing on the Olympic podium holding the wrong-colored medal because it wasn't a fair race. I don't want other young girls and women to endure similar experiences, but I see that they are, and with increasing regularity. There is no excuse for perpetuating this injustice. Our girls deserve fair and equal opportunities in sports.

"After all the progress women have made in recent decades, I do not understand why so many people are turning a blind eye to injustice and to the history of what women have fought for. Of course, boys and men facing gender dysphoria should be cared for, however, allowing them to compete in the women's category only unjustly shifts pain and unfairness to girls and women who will throughout their lives in sport face a deficit far greater than I faced in the starting blocks in Seoul when lining up against the East Germans.

"Some say sport only needs to be fair at the highest, most elite levels. I emphatically disagree. Girls need to know they don't have to reach elite levels to be worthy of fair treatment and fair competition. If rules and laws do not clearly convey that girls deserve fair sports at every level, many will forsake athletic opportunities. But we also risk

something even worse, adults communicating to girls that fairness is not really a concept that applies to them.”

D. Marshi Smith, NCAA Champion, Medical Device Sales Representative, ICONS Co-Founder

Marshi Smith explains why protecting girls’ sport is essential to future generations of women – “I started my career in sales shortly after graduating from the University of Arizona. My Olympic dreams had been torn away from me by a training-induced, shoulder injury the year after winning a NCAA backstroke title. Heartbroken, I found myself suddenly sitting across a desk from managers asking me to convince them to hire me with exactly zero hours of work experience on my resume. I stepped into the interview underqualified on my resume but extremely confident in my own ability to learn and thrive. When the management team asked me about my work experience, I told them the story of my junior year on the swim team.

“At the start of that season, I told myself and my coach I had decided to win an NCAA title. I wrote a goal sheet outlining the race to achieve my goal time, 52.82 a time I chose to break my school record by .01 seconds. I described my devotion to reaching that goal from swimming sets before dawn to running hundreds of grueling stadium

steps and always drifting to sleep believing my dream was achievable...52.82...52.82...52.82. I talked about walking onto the pool deck at the NCAA Championships that year knowing nobody could possibly want to win more than I did. And then I did. I touched the wall in 52.82 exactly to the hundredth of a second. I broke my school record. I won a national title. The manager hired me on the spot.

“At the time I was one of only two women working for the company in a national sales position. I stood on the national stage as a top sales representative several times in my career, often as one of very few women. They say, ‘a picture is worth a thousand words.’ Below is a picture of the 2017 National Sales Meeting ‘Territory of the Year’ Award winners from my company. It won’t be difficult for the reader to pick me out in the picture. Yet, I know my life would not have led to that stage had men been allowed to compete against me in sport.

“Although my goal has changed, I have equal passion and devotion today to what I had on my college pool deck. My new goal sheet commits to preserving the equal chance for my seven-year-old daughter to see herself as a champion. She has just begun her swim lessons and deserves the same opportunity to participate and win in her sport that

my son does. I cannot sit by and accept that I may have been one of the last generations of women with the right to fair treatment and equal opportunity in sport. This generation and the next deserve to tell the stories that launch careers.

“The women’s category in sport has tremendous value for women. Separating girls from boys is the indispensable key to unlocking the transformative power of sport to change young girls’ lives. If legal decisions throw away that key, it will place the dreams of millions of young girls outside their reach and communicate that young girls, unlike boys, are not deserving full protection even from a law that was meant to protect them.”



II. SEX IS A BIOLOGICAL FACT AND ATHLETIC PERFORMANCE IS TIED DIRECTLY TO SEX

A. Appellants Misapply *Hecox* and *A.M.*

Appellants claim “similar” cases on which this Court should rely are *Hecox v. Little*, 479 F.Supp.3d 930 (D. Idaho 2020), *appeal filed*, No. 20-35815 (9th Cir. Sept. 17, 2020) and *A.M. by E.M. v. Indianapolis Pub. Sch.*, 617 F. Supp. 3d 950 (S.D. Ind. 2022), appeal dismissed sub nom. *A.M. by E.M. v. Indianapolis Pub. Sch. & Superintendent*, No. 22-2332, 2023 WL 371646 (7th Cir. Jan. 19, 2023).⁶ See Appellants’ Opening Brief, Dkt. 53, p. 30 of 72.

However, neither case is like this one. Both were preliminary injunction decisions and did not weigh expert scientific testimony against a robust evidentiary standard.⁷ In *A.M.* the district court stated it “need not” consider expert testimony in issuing an injunction, *A.M.*, 617 F.Supp.3d at 958, while in *Hecox*, the court made a number of

⁶ The *A.M.* case was voluntarily withdrawn when the 10-year-old plaintiff who wanted to play girls softball transferred to another school.

⁷ See *Hecox*, 479 F.Supp.3d at 982 (“[u]ltimately, the Court must hear testimony from the experts at trial and weigh both their credibility and the extent of the scientific evidence”); *A.M.*, 617 F.Supp.3d at 958 (“the Court need not consider opinions regarding whether differences between the sexes in athletic performance exist before the onset of puberty in order to decide *A.M.*’s Motion for Preliminary Injunction”).

observations that, as explained below, are inconsistent with existing peer reviewed scientific research, rendering that decision an unreliable guide. *See, e.g., Hecox*, 479 F.Supp.3d at 978 (“it is not clear . . . transgender women who suppress their testosterone have significant physiological advantages over cisgender women”), *Id.* at 980 (concluding “legislative findings . . . that even after receiving hormone and testosterone suppression therapy, transgender women and girls have ‘an absolute advantage’ over non-transgender girls” were not accurate).

Furthermore, *Hecox* asserted “policies of elite athletic regulatory bodies across the world . . . undermine [the] claim that transgender women have an ‘absolute advantage’ over other female athletes,” relying “[s]pecifically” on policies of “the International Olympic Committee [IOC] and . . . NCAA.” *Hecox*, 479 F.Supp.3d at 981. These claims, inaccurate when made, are even more inaccurate now.

The IOC has not adopted an eligibility policy for transgender athletes as *Hecox* suggests. Rather, in 2011 and 2021 the IOC simply released guidelines offering recommendations for international sport federations to consider when drafting eligibility rules. The IOC has always recommended consideration of scientific evidence regarding

competitive fairness and athlete safety for sport eligibility rules. And since *Hecox* was decided, international sport federations such as World Athletics (track and field), World Aquatics (aquatic sports including swimming, diving, water polo) and World Rugby, among others, have adopted rules barring transgender competitors in the women's category who have experienced any degree of male puberty. As for the NCAA, in 2022 it made explicit that it would apply the eligibility rules of sport governing bodies (*i.e.*, not its' own rules) on a sport-by-sport basis.

B. Biological Sex is the Dominant Factor Influencing Sport Performance

A recent peer reviewed study reports that post puberty “the performance gap between males and females . . . often amounts to 10–50% depending on sport.”⁸ “Sex is a major factor influencing best performances and world records”⁹ in Olympic sport. In a study of

⁸ Hilton, E.N., Lundberg, T.R., “Transgender Women in the Female Category of Sport: Perspectives on Testosterone Suppression and Performance Advantage,” *Sports Medicine* (2021) 51:199-214, p. 199 (hereafter “Hilton & Lundberg, Female Category of Sport”).

⁹ Thibault, V., Guillaume, M., Berthelot, G., El Helou, N., Schaal, K., Quinquis, L., Nassif, H., Tafflet, M., Escolano, S., Herine, O., Toussaint, J.F., “Women and men in sport performance: The gender gap has not evolved since 1983,” *Journal of Sports Science and Medicine* (2010) 9, 214-223, p. 214, *available at*:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3761733/>

performance by some of the most highly trained athletes in the world, researchers evaluated 82 quantifiable events since the beginning of the Olympic era (*i.e.*, from 1896 to 2007). They found men outperformed women in all sports with a mean difference of $10.0\% \pm 2.94\%$ between them depending upon event.¹⁰

“There is a clear sex difference in both muscle mass and strength even adjusting for sex differences in height and weight. On average women have 50% to 60% of men’s upper arm muscle cross-sectional area and 65% to 75% of men’s thigh muscle cross-sectional area, and women have 50% to 60% of men’s upper limb strength and 60% to 80% of men’s leg strength. Young men have on average a skeletal muscle mass of >12 kg greater than age-matched women at any given body weight.”¹¹ The impact is “an obvious performance enhancing effect[.]”¹²

“[O]n average men are 7% to 8% taller with longer, denser, and

¹⁰ *Id.* They also observed many of these timed performances for women “coincided with later-published evidence of state-institutionalized or individual doping,” suggesting the gender gap is actually even larger than the reported statistical differences. *Id.*

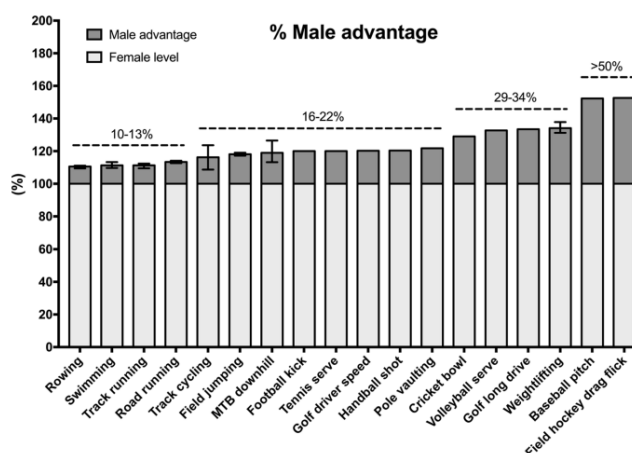
¹¹ Handelsman, D.J., Hirschberg, A.L., Bermon, S., “Circulating Testosterone as the Hormonal Basis of Sex Differences in Athletic Performance,” *Endocr. Rev.* 2018 Oct; 39(5): 803-829 (hereafter, “Handelsman, et al., Sex Differences in Athletic Performance”).

¹² *Id.*

stronger bones, whereas women have shorter humerus and femur cross-sectional areas being 65% to 75% and 85%, respectively, those of men.”¹³ The athletic advantages conferred by men’s larger and stronger bones includes, “greater leverage for muscular limb power exerted in jumping, throwing, or other explosive power activities” and greater male protection from stress fractures.¹⁴

The sex-based performance gap is not limited to certain sports but applies generally to most skills necessary for success in sport. The following chart illustrates male advantage across a wide group of discrete sport skills.

Fig. 1 The male performance advantage over females across various selected sporting disciplines. The female level is set to 100%. In sport events with multiple disciplines, the male value has been averaged across disciplines, and the error bars represent the range of the advantage. The metrics were compiled from publicly available sports federation databases and/or tournament/competition records. *MTB* mountain bike



Reproduced from: Hilton & Lundberg, *Female Category of Sport* p. 202, Fig. 1.

¹³ *Id.*

¹⁴ *Id.*

C. Male Sport Performance Advantage is Clearly Apparent at Every Age, Even Pre-Puberty

As the foregoing makes clear, the sex-based sport performance gap is not just real, it is massive. Furthermore, male-female performance differences exist from the earliest stages, including in youth sports. Study after peer-reviewed study has shown clear performance advantages for males in sport *pre-puberty*.¹⁵

For instance, a comprehensive review of fitness data from over 85,000 Australian children aged 9-17 years showed that compared to 9-year-old females, 9-year-old males were faster at short sprints (9.8%) and one mile (16.6%), could jump 9.5% further from a standing position (a test of explosive strength), could complete 33% more push-ups in 30 seconds and had a 13.8% stronger grip.¹⁶ A similarly large advantage for males was found in a study of Greek children, in which 6-year-old males, compared to 6-year-old females, completed 16.6% more shuttle

¹⁵ See, e.g., age group standards in USA swimming reflective of male advantage at every age, distance and stroke, available at: <https://www.usaswimming.org/docs/default-source/timesdocuments/time-standards/2024/2021-2024-national-age-group-motivational-times.pdf>.

¹⁶ Catley MJ, Tomkinson GR. Normative health-related fitness values for children: analysis of 85347 test results on 9-17-year-old Australians since 1985. Br J Sports Med. 2013 Jan;47(2):98-108.

runs in a given time and could jump 9.7% further from a standing position. In terms of aerobic endurance capacity, 6–7-year-old males were shown to have higher absolute and relative (to body mass) maximum oxygen uptake than 6–7-year-old females.¹⁷ Numerous similar peer reviewed studies were cited in expert reports of Dr. Tommy Lundberg of the Karolinska Institute in Stockholm and of Dr. Emma Hilton of the University of Manchester, UK, at the injunction phase in the *A.M.* case.¹⁸

1. Higher Androgen Levels in Male Infants

Appellants contend that due to recent hormone suppression B.P.J. “will develop the same changes to bone size, skeletal structure, [and] pelvis shape . . . [among other characteristics] that are typically experienced by . . . girls who go through a typically female puberty.” Appellants’ Brief at 51 of 72. This is wrong as the studies cited below make clear. In fact, to fully mitigate the performance enhancing effects

¹⁷ Tambalis KD, Panagiotakos DB, Psarra G, Daskalakis S, Kavouras SA, Geladas N, Tokmakidis S, Sidossis LS. Physical fitness normative values for 6-18-year-old Greek boys and girls, using the empirical distribution and the lambda, mu, and sigma statistical method. *Eur J Sport Sci.* 2016 Sep;16(6):736-46.

¹⁸ *A.M. by E.M. v. Indianapolis Pub. Sch.*, Case No. 1:22-cv-01075-JMS-DLP (S.D. Ind. 2022) (“*A.M.* case”), Dkt. Nos. 36-6, 36-7, 57-1, 57-2.

of testosterone on B.P.J. hormone intervention would had to have commenced at birth if not in the womb.

Differences in average body length (measured as head-bottom length) can be detected by ultrasound from the first trimester of pregnancy, with males already longer than females.¹⁹ Larger average skull diameter in male fetuses at twenty weeks has been reported.²⁰ Gestational growth charts track not just higher male values for skull diameter but also abdominal circumference and estimated fetal weight.²¹ The expert reports of Drs. Lundberg and Hilton in the *A.M.* case detail these and other significant differences in biological development between males and females.

Research has established the existence of higher levels of androgens in infant boys during the first six months of their development.²² For instance, “[t]esticular testosterone concentrations

¹⁹ Pedersen, 1980. Ultrasound evidence of sexual difference in fetal size in first trimester. *British Medical Journal* 281(6250): 1253.

²⁰ Persson et al., 1978. Impact of fetal and maternal factors on the normal growth of the biparietal diameter. *Scandinavian Association of Obstetricians and Gynaecologists* 78: 21-27.

²¹ Schwartzler et al., 2004. Sex-specific antenatal reference growth charts for uncomplicated singleton pregnancies at 15–40 weeks of gestation. *Ultrasound in Obstetrics and Gynaecology* 23(1): 23-29.

²² Bidlingmaier, F., Dorr, H.G., Eisenmenger, W., Kuhnle, U., Knorr, D.,

were [found to be] maximal in boys 1-3 months of age, with peak values similar to those in pubertal or even adult testes.”²³ At the same time, it was found that the adrenal glands were important “as a source of androstene-dione [another anabolic agent similar to testosterone] in male infancy.”²⁴ “Testosterone and dihydrotestosterone [another steroid] levels in [umbilical] cord blood are higher in males than in females. The presence of dihydrotestosterone suggests that there is active fetal peripheral metabolism of testosterone to dihydrotestosterone [during fetal development].”²⁵

Increased testosterone levels during this “mini-puberty” phase in males aged 1-6 months may be correlated with a faster growth rate and an “imprinting effect” on body mass index and body weight.²⁶ This burst

“Contribution of the adrenal gland to the production of androstenedione and testosterone during the first two years of life,” *J Clin Endocrinol Metab.* 1986 62:331–335, available at:

https://core.ac.uk/reader/12168690?utm_source=linkout

²³ *Id.* at 331.

²⁴ *Id.* at 334.

²⁵ Pang, S., Levine, L.S., Chow, D., Sagiani, F., Saenger, P., New, M.I., “Dihydrotestosterone and its relationship to testosterone in infancy and childhood,” *J Clin Endocrinol Metab.* 1979 48:821–826, available at: <https://academic.oup.com/jcem/article-abstract/48/5/821/2679038?redirectedFrom=fulltext&login=false>

²⁶ Lanciotti L, Cofini M, Leonardi A, Penta L, Esposito S. Up-To-Date Review About Minipuberty and Overview on Hypothalamic-Pituitary-

of testosterone is associated with higher growth velocity for males in the first six months of life,²⁷ higher weight gain, lower acquisition of body fat and lower body mass index.²⁸ Such data led Dr. Hilton to opine in the *A.M.* case that “transient exposure to testosterone in mini-puberty thus seems to underpin the well-established structural differences between males and females in childhood.”²⁹

2. Differences in Pre-Pubertal Skeletal Size and Strength

As noted above, there are differences in male skeletal structure compared to females. In one study of pre-pubertal subjects, the “cross-sectional areas of [the lumbar spine] were significantly smaller in girls than in boys.”³⁰ The difference between the prepubertal boys and girls

Gonadal Axis Activation in Fetal and Neonatal Life. *Front Endocrinol (Lausanne)*. 2018 Jul 23;9:410.

²⁷ Kiviranta et al., 2016. Transient Postnatal Gonadal Activation and Growth Velocity in Infancy. *Pediatrics* 138(1): e20153561.

²⁸ Becker et al., 2015. Hormonal ‘minipuberty’ influences the somatic development of boys but not of girls up to the age of 6 years. *Clinical Endocrinology* 83: 694-701.

²⁹ *A.M.* case, Dkt. No. 36-6, ¶ 3.5.

³⁰ Gilsanz, V., Kovanlikaya, A., Costin, G., Roe, T.F., Sayre, J., Kaufman F., “Differential Effect of Gender on the Sizes of the Bones in the Axial and Appendicular Skeletons,” *Journ. of Clinical Endocrin. & Metabolism*, Volume 82, Issue 5, 1 May 1997, Pages 1603–1607 available at:

<https://academic.oup.com/jcem/article/82/5/1603/2823501?login=false>

spine width was found to be 11%.³¹ These researchers observed that because “only prepubertal children were studied, . . . our results cannot be attributed to gender differences in the heights of upper skeletal segments, as sitting heights and the heights of the lumbar vertebrae were similar in boys and girls.”³²

3. Male-Female Differences Elude Complete Description in any Space Limited Survey

Dr. Hilton reports “analysis of sex-specific genetic architecture in adults reveals some 6500 differences in gene expression, likely to influence development and function outside of hormone effects.”³³ She also observed that, “male advantage over females is not limited to those physical and functional differences conferred by male morphology, shape and size. Most obviously, female athletes must typically deal with the effects of the menstrual cycle and the cyclical effects of hormones on training capacity and performance. The menstrual cycle is known to affect cardiovascular, respiratory, brain function, response to ergogenic

³¹ *Id.*

³² *Id.*

³³ *A.M. case*, Dkt. No. 36-6, ¶ 3.2, citing Gershoni and Pietrokovski, 2017. The landscape of sex-differential transcriptome and its consequent selection in human adults. *BMC Biology* 15(1): 7.

aids, orthopedics, and metabolic parameters, and represents a barrier to athletic capacity not experienced by males.”³⁴ In short, male-female differences impacting sport performance are so extensive they cannot be fully described in a brief.

D. Male Advantage Exists Even After Attempts to Suppress Testosterone Levels

To test the idea that testosterone suppression and feminizing hormones would eliminate male advantages in sport Drs. Hilton and Lundberg reviewed *eleven published, peer-reviewed original studies* in male individuals identifying as transgender who had undergone at least 12 months of testosterone suppression. They found a unified consensus that muscle mass and strength measurements remained far higher than in female reference subjects. Hilton & Lundberg, Female Category of Sport. Their conclusions were supported by transgender runner and scientist Joanna Harper in a second review of the same dataset who concluded while “hormone therapy decreases strength, LBM and muscle area, yet values remain above that observed in cisgender women, even after 36 months.”³⁵

³⁴ *A.M.* case, Dkt. No. 36-6, ¶ 4.5.

³⁵ Harper *et al.*, 2021. How does hormone transition in transgender

In another recent study, boys self-identifying as girls who had received puberty blockers from around 13 years of age, then cross-sex hormones at 16 years of age grew to an average adult height (180.4cm) far larger than the population female average (170.7cm) and closer to the population male average (183.8cm).³⁶

III. SEX SEPARATION IS ESSENTIAL TO PRESERVING FEMALE OPPORTUNITIES IN SPORT

A. A Category for Female Athletes Based on Sex is How Women Participate in Sport Equally to Men

As *Amici* explain, the only way sport can be fair and equal for women is with a protected women's category that excludes competitors with male advantage. Title IX was enacted in part to advance just such sex separation in sport that advances women.

Recently established eligibility rules which limit or prohibit transgender eligibility in the women's category have recently won back ground preserving female opportunities in some Olympic sports.

However, several court decisions permitting males to compete in the

women change body composition, muscle strength and haemoglobin? Systematic review with a focus on the implications for sport participation. *British Journal of Sports Medicine* 55(15): 865-872.

³⁶ Boogers *et al.*, 2022. Trans girls grow tall: adult height is unaffected by GnRH analogue and estradiol treatment. *Journal of Clinical Endocrinology and Metabolism*.

female category have turned Title IX on its head displacing women.

B. Without Protection of the Girl's Category Girls Will Drop Out of Competitive Sport

Amici Janel Jorgensen McArdle explained that had she been confronted with doping in her sport before she reached the Olympics she likely would have dropped out and expects this may happen to girls forced to compete against boys. Her concerns are substantiated by reports of women in other sports who chose not to compete against males because they understand they “have zero chance, so what is the point of wasting our money on registration fees?”³⁷

C. Requiring Sport to Accept Eligibility Rules Not Based on Objective Criteria Harms Both Women and Sport

Fixed rules are “fundamental in representing the boundaries of fair sporting competition.”³⁸ To facilitate competitive fairness, increase sport opportunities and protect the safety of athletes, objective sport eligibility rules such as age limits, amateurism rules, anti-doping rules, paralympic disability classifications, qualifying standards, senior classifications, weight categories and sex-based categories are essential.

³⁷ See, e.g., <https://quillette.com/2022/09/28/is-this-the-lia-thomas-of-disc-golf/>.

³⁸ Handelsman, *et al.*, Sex Differences in Athletic Performance, p. 806.

Until recently objective rules have not been considered subject to an athlete's decision to opt out of compliance. Wrestlers and boxers for instance are still not able to self-declare their preferred weight class. Adults may not compete in junior categories no matter how unskilled the adult or how much better it might make them feel to compete with the children they may wish they were. Yet, whenever objective criteria are abandoned in favor of self-defined entry criteria the results tend to be unfair, administratively unworkable, and destructive to sport.³⁹ The same is true for allowing males to self-designate into the female category.

IV. CONCLUSION

The crowning achievement of Title IX has been its capacity to propel women to success in male dominated businesses.⁴⁰ The reason

³⁹ For instance, the former head of the International Paralympic Committee (IPC) recently called for reform to save the integrity of the Games due to Paralympians self-declaring disability. See <https://www.abc.net.au/news/2023-04-03/paralympic-games-classification-system-exploited-australian/102165924>.

⁴⁰ See "Ernst & Young Studies The Connection Between Female Executives And Sports," ("90% of the women surveyed had played sports . . . with this proportion rising to 96% among C-suite women"), available at: <https://www.forbes.com/sites/alanaglass/2013/06/24/ernst-young-studies-the-connection-between-female-executives-and-sports/?sh=7338319633a2>; Stevenson, B., "Beyond the Classroom: Using

for this, of course, is because Title IX's *raison d'être* has always been to fight discrimination *against* women. This rationale is turned on its head, however, by efforts to convert the statute into means by which girls are required to face boys in competition to remedy boys who identify as transgender "hav[ing] . . . been discriminated against." Appellants' Brief at 49 of 72.

As *Amici* point out, Title IX cannot simultaneously do two things at once. It cannot both provide opportunities to girls in sport at the same time it schizophrenically enables boys to compete against and displace girls, particularly when the very biological factors which justified Title IX's embrace of sex-separation in sport persist.

It would be nice if Title IX were magic dust that could make all things work out well in the end. Title IX is not, however, magic dust to be sprinkled on a problem to make it go away. Title IX is instead a

Title IX to Measure the Return to High School Sports," National Bureau Of Economic Research ("a 10-percentage point rise in state-level female sports participation generates a 1 percentage point increase in female college attendance and a 1 to 2 percentage point rise in female labor force participation . . . greater opportunities to play sports leads to greater female participation in previously male-dominated occupations"), *available at*: https://www.nber.org/system/files/working_papers/w15728/w15728.pdf.

statute drafted to protect women and girls, that uses terms such as “women,” “men” “girls” and “boys” with fixed meanings rooted in biology and what English language dictionaries for centuries have said they mean. Only if those terms are given their fixed, original meaning can the statute do its job and only if Title IX is interpreted as protecting “women” and “girls” will it cease being a sword that harms them.

Only if Title IX is interpreted correctly will it confer the benefits *Amici* have experienced as Title IX was intended to do and long did so well, providing opportunities to girls and women, helping them overcome discrimination, prosper and succeed.

The district court interpreted Title IX correctly and should be affirmed.

Respectfully Submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on May 3, 2023, I electronically filed the foregoing document with the Clerk of the Court for the United States Court of Appeals for the Fourth Circuit by using the CM/ECF system. Participants in this case who are registered CM/ECF users will be served by the CM/ECF system.

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CERTIFICATE OF COMPLIANCE

1. This brief complies with the word limit of Local Rule 29(a)(5) because, excluding the portions exempted by Fed. R. App. P. 32(f)⁴¹, this brief contains 6,500 words.

2. This brief also complies with the typeface requirements of Fed. R. App. P. 32 (a)(5) and the type-style requirements of Fed. R. App. P. 32(a)(6) because this brief has been prepared in a proportionally spaced typeface using Microsoft Word in 14-point Century Schoolbook font.

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⁴¹ Note: The text of footnote 1 has likewise been excluded because it contains the disclosure statement required by Fed. R. App. P. 29(a)(4)(E).